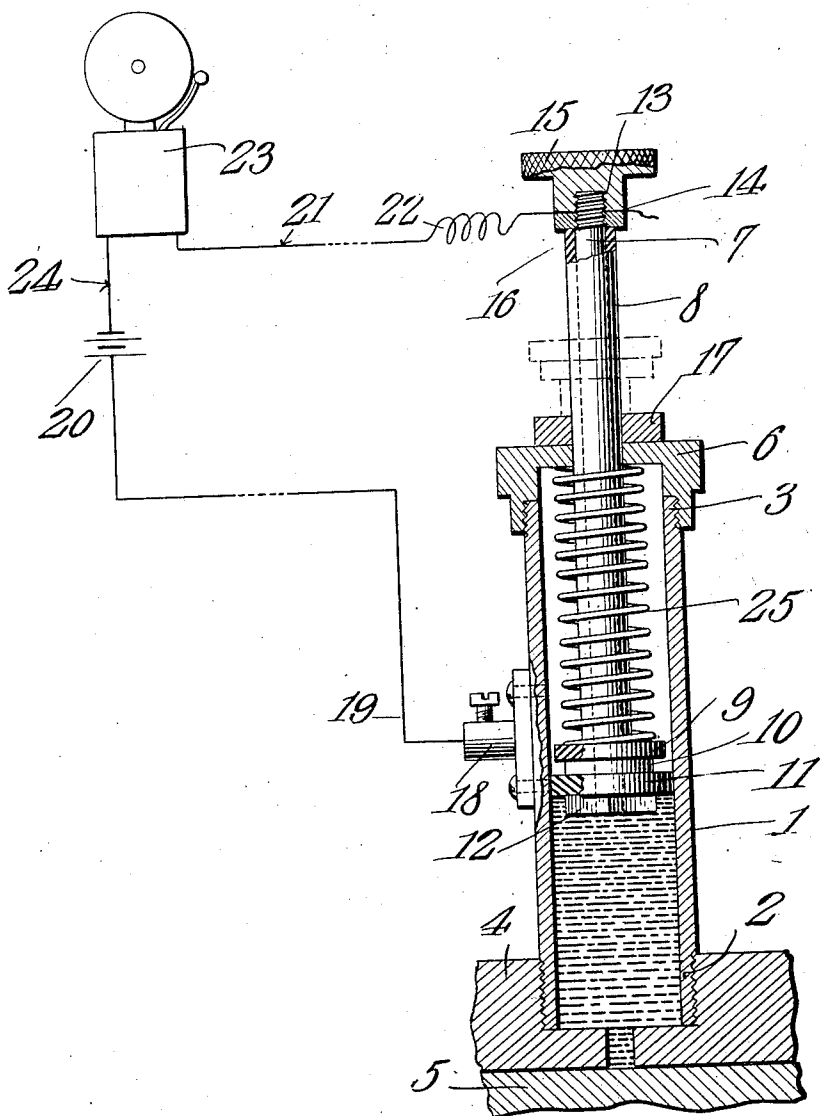


W. A. HARDWICK.
ELECTRIC ALARM LUBRICATOR.
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1,003,455.



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UNITED STATES PATENT OFFICE.

WILLIAM A. HARDWICK, OF MEMPHIS, TENNESSEE.

ELECTRIC-ALARM LUBRICATOR.

1,003,455

Specification of Letters Patent. Patented Sept. 19, 1911.

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To all whom it may concern:

Be it known that I, WILLIAM A. HARDWICK, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented a new and useful Electric-Alarm Lubricator, of which the following is a specification.

It is the object of the invention, generally, to provide a lubricator which will sound an electric alarm when the lubricant is exhausted.

Specifically, it is the object of this invention to provide novel means for assembling the constituent parts of the movable portion of the lubricator, and to provide novel means for preventing short-circuiting within the lubricator.

The invention is shown in a single sectional figure, wherein the electrical circuits appear diagrammatically.

In carrying out the invention there is provided a cylinder 1, threaded at one end, as shown at 2, for engagement with a bearing 4, in which a movable machine part 5 operates. At its other end, the cylinder 1 is threaded as shown at 3, to receive a two-part cap, the same including a closure 6, and a superposed washer 17 which may be secured to the closure 6. The cylinder 1, the closure 6 and the washer 7 are fashioned from metal.

Slidably mounted in the cap 6—17, is a sleeve 8, fashioned from insulating material. A metal rod 7 is disposed within the sleeve. A piston is disposed within the cylinder 1 and is secured upon the inner end of the rod 7. This piston is a composite structure, comprising an insulating head 11, a superposed metal washer 10, and an insulating washer 9 superposed upon the washer 10, the washer 9 abutting against the inner end of the insulating sleeve 8.

The extremities of the rod 7 are threaded, as indicated at one end of the rod by the numeral 13, the threaded portions of the rod 7 receiving nuts 16 and 12, one of which nuts, namely the nut 16, engages one end of sleeve 8, the other of which nuts, namely the nut 12, engages the head 11 of the piston, the construction being such that the sleeve 8 is bound between the piston and the nut 16.

A compression spring 25 surrounds the sleeve 8 and bears at one end against the closure portion 6 of the cap, the spring 25

at its other end, bearing against the insulating washer 9 of the piston structure, in order to depress the piston. At this point it may be noted that the spring 25 is insulated throughout its entire length from the rod 7, by the sleeve 8.

The invention further includes an open electrical signal circuit of which the cap 6—17 and the nut 16 are terminals, the nut 16 being movable with the piston structure, into the vicinity of the cap 16—17, to close said circuit.

Secured to the cylinder 1 is a binding post 18, carrying a conductor 19, connected with one side of a battery 20. From the other side of the battery 20, a conductor 24 leads to an electrical signal, preferably a bell 23. From the bell 23 a conductor 21 leads to the nut 16, the extremity of the conductor 21 being bound upon the nut 16 by the hub of a milled head 15, threaded upon the portion 13 of the rod 7. The conductor 21 may include a helical portion 22, giving the conductor 21 resiliency, whereby the rod 7 and its adjacent parts may be permitted to move within the cylinder 1.

When the lubricant which is within the cylinder 1 oozes away, under the pressure exerted upon the piston by the spring 25, the nut 16 will come into contact with the element 17 of the cap, thus closing the circuit. The closed circuit will embrace the following elements, beginning with the battery 20. The conductor 19, the post 18, the cylinder 1, the elements 6 and 17 of the cap, the nut 16, the conductor 21, the bell 23 and the conductor 24. When the circuit is thus closed, due to the oozing away of the lubricant, the bell 23 will ring, thereby indicating that the lubricant is exhausted. When, however, as shown in the drawings, the nut 16 is spaced from the element 17 of the cap, the circuit will be open, for the reason that the rod 7 at its inner end is insulated from the cylinder 1 by the head 11 of the piston structure, the intermediate portion of the rod 7 being insulated from the cap 6—17 by the sleeve 8.

The piston structure 11—10—9 exercises a double function. Obviously, it serves as a means for expelling the lubricant from the cylinder 1, and at the same time it serves as an abutment for one end of the sleeve 8. The nut 16 exercises a double function, in that it constitutes a means for binding the

sleeve 8 against the piston structure, and at the same time serves as one terminal of the signal circuit.

Owing to the fact that the sleeve 8 extends through the entire length of the spring 25, the short-circuiting, due to a lateral yielding of the spring 25, will be prevented, it being obvious that if it were possible for the spring 25 to engage the rod 7 through lateral yielding, the current would traverse the conductor 19, the post 18, the cylinder 1, the cap 6—17, the spring 25, the rod 7, the washer 16 and the conductor 21, the bell 23, under such circumstances, being operated, even when the cylinder 1 was partly filled with lubricant, the nut 16 and the element 17 of the cap being spaced apart.

Having thus described the invention, what is claimed is:—

20 In a device of the class described, a cylinder; a cap secured thereto; an insulating sleeve slidable in the cap; a rod within the sleeve; an insulating piston within the cyl-

inder and upon the inner end of the rod; nuts upon opposite ends of the rod, one of which nuts engages one end of the sleeve, and the other of which nuts engages the piston to bind the sleeve between the piston and the first named nut; a compression spring surrounding the sleeve and bearing at one end against the cap, the spring at its other end bearing against the piston to depress the same, the spring being insulated throughout its entire length from the rod, by the sleeve; and an open electrical signal circuit of which the cap and the first named nut are terminals, said nut being movable with the piston to engage with the cap, to close said circuit.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM A. HARDWICK.

Witnesses:

C. BOLLINGER,
W. S. ROGERS, Jr.